Item Unique Identification (IUID) Basics Tutorial 101

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DoD: Facing new challenges

Challenges:

- *Rapidly moving forces on a dynamic battlefield*
- *Demand for better information on assets*
- *Need for more effective visibility and management of inventory*

How we will meet them:

- *Improve business processes now*
- *Improve confidence*
- *Influence the direction and cost of technology development*
- *Drive the standards to work for us*
- *Facilitate the*

IUID: What makes it so special?

IUID…

➢ **Provides** *"The Key"* **to discovery and correlation of item, real property and human resource information so DoD can** *consistently locate, control and value assets* **anywhere and anytime**

➢ **Enables** *globally accessible and secure* **enterprise data**

➢ **Registries enable** *creation of IUID mission critical services* **to:**

  ➢ **Translate legacy data for existing DoD systems**

  ➢ **Enable access for operational support**

UID Forum
Implementation Strategies for Programs and Suppliers
Sponsored by
IUID
ITEM UNIQUE IDENTIFICATION
ENABLING LIFECYCLE TRACEABILITY
DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA

Back to the Future

"I think the industry has sold itself on a program that offers so little return that it simply won't be worth the trouble and expense"
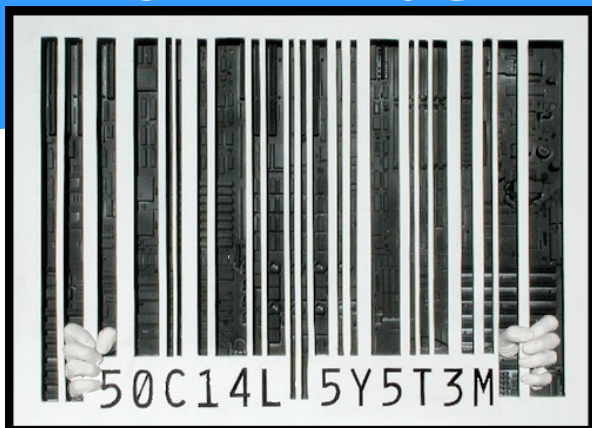
...ussing the potential ...f the barcode in **1975***

...canning Hits a Snag," Progressive Grocer, December 1975, p.

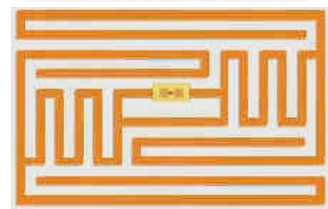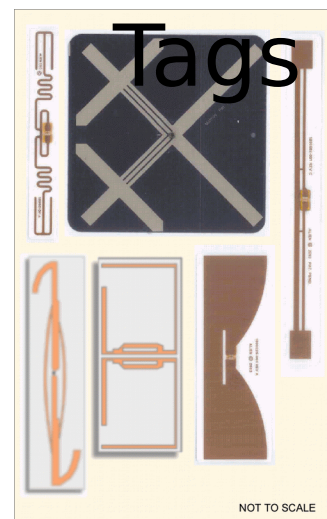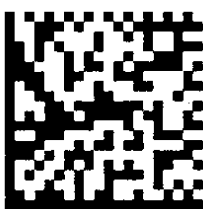# Automatic Identification Technology

1D Barcode

Contact Memory Buttons

Passive RFID Tags

2-D Barcodes

Data Matrix
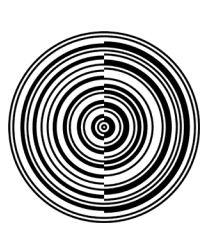
QR Code

MaxiCode

PDF417

Bullseye

Aztec

NOT TO SCALE

Active RFID Tags

UID Hierarchy

➢ Unique Identification (**UID**) is a system of identifying entities to distinguish them from each other.

➢ Item Unique Identification (**IUID**) is a system of marking items with Unique Item Identifiers (UIIs) that distinguish them from all other like and unlike items.

➢ Other efforts include:
  ➢ Real Property Unique Identification (RPUID)
  ➢ Acquisition Program Unique Identification (APUID)
  ➢ System Unique Identification (SYSUID)
  ➢ Organization Unique Identification (OUID)
    ➢ Internal DoD (FMID)
    ➢ External to DoD (CAGE, DUNS, etc.)

What Does IUID Provide?

Uniquely identifying tangible items will provide the "**data key**" to item life cycle traceability in DoD business processes and information systems and provide reliable and accurate data for management, financial, accountability, and asset management purposes.

Required on all new Solicitations since 1 January 2004

AND

*Legacy item compliance mandatory between 2008 and 2015*

IUID Policy Overview

➢ Policy memorandum released on July 29, 2003 (with subsequent updates) established IUID as a mandatory DoD requirement on all solicitations issued on or after January 1, 2004.

➢ IUID is required for all property items delivered to the Government if:

> ➢ *Acquisition cost is greater than or equal to $5,000*

> ➢ *Items with an acquisition cost below $5,000, when identified by the requiring activity as DoD serially managed, mission essential, or controlled inventory*

> ➢ *Items with an acquisition cost below $5,000 as determined by the requiring activity*

> ➢ *Regardless of value, any DoD serially managed subassembly, component or part embedded within an item and the "parent" item in which it is embedded*

➢ Wide Area Workflow (WAWF) is the preferred method for capturing IUID data and is the mandatory DoD invoicing system

Uniquely Identifying Items Delivered Under Contract and Legacy Items in Inventory or Use
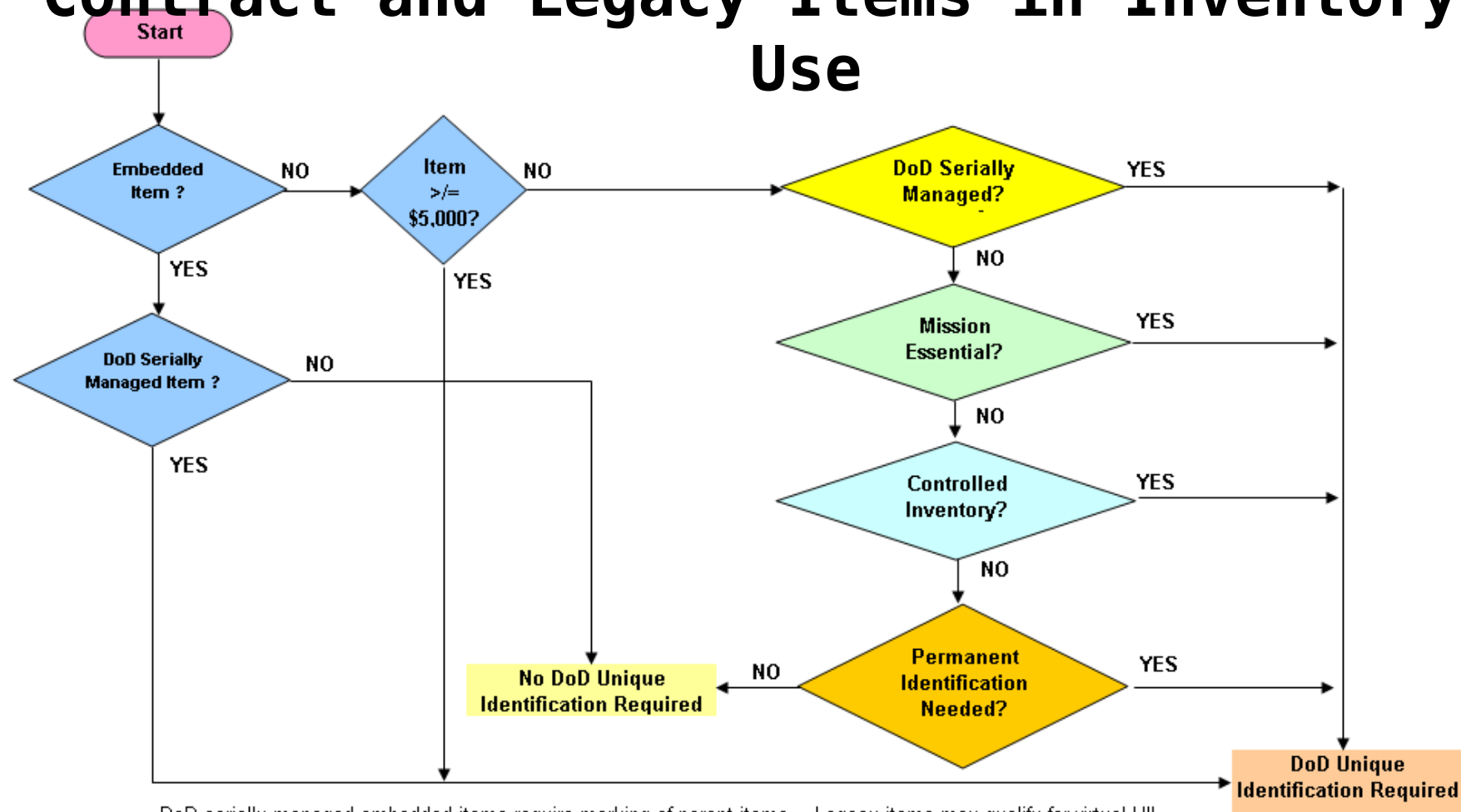
- DoD serially managed embedded items require marking of parent items
- Legacy items may qualify for virtual UII

Key Direction from IUID Policy Updates

➢ **Apply IUID to legacy items in inventory and operational use**

➢ **All program and item managers plan for and implement IUID**
>   ➢ ACAT 1D programs submitted plans by June 2005
>   ➢ All others to MDAs by January 2006
>   ➢ All new programs must submit a plan as part of their System Engineering Plan

➢ **Government Furnished Property (GFP) must meet IUID policy requirement effective 1 Jan 2006**

➢ **Plans targeted FY2007 as the point by which:**
>   ➢All existing serialized assets will be entered in IUID Registry
>   ➢UII marking capabilities established such that marking can commence when equipment is returned for maintenance

Key Direction from IUID Policy Updates

➢ <u>**DUSD (Logistics and Material Readiness)**</u> **develop IUID implementation plan for organic depot maintenance operations**

➢ <u>**Jan 2007**</u>**:   OUSD Materiel Readiness & Maintenance Policy released "Implementing Item-Unique Identification in DoD Maintenance" (dated 31 Jan 07)**
  - ➢ **The Concept of Operations for IUID-Enabled Maintenance in Support of DoD Materiel Readiness**

➢ <u>**14 March 2008**</u>**: Memo Under Secretary AT&L John Young.**
  - ➢ **Policy for IUID of Tangible Personal Property – Oversight of IUID Implementation Planning and Execution**

➢ <u>**16 June 2008**</u>**: DoDI 8320.04 Item Unique Identification (IUID) Standards for Tangible Personal Property**
  - ➢ **http://www.dtic.mil/whs/directives/corres/pdf/832004p.pdf**

➢ <u>**3 Aug 2009**</u>**: Under Secretary AT&L Ashton Carter, "Preservation and Storage of Tooling for Major Defense Acquisition Programs (MDAPs)"**
  - ➢ **Requires IUID and the planning for Preservation and Storage of Tooling for prior to Milestone C (SEP) and at Milestone C (LCSP)**

System Engineering Requirement

➢ **AT&L Memo-Implementation Planning & Execution 14 March 2008**

    ➢ System Engineering Plan

        Describe overall IUID Implementation Strategy to include

            Requirements Generation

            Marking

            Data Submission

            Describe role of IUID in program sustainment strategy

        List Metrics

        Implementation Timeline

    ➢Life Cycle Supportability

        Property accountability & management and financial accounting enabled by IUID

        Incorporate capability to use IUID in all new Automated Information Systems (AIS) used for management of property

➢ **DODI 5000.02 "Operation of the Defense Acquisition System, 2 December 2008**

    IUID Implementation Plan required per DoD Instruction 8320.04

    Milestone A (summarized in SEP)

    Milestone B (annex to SEP)

    Milestone C (annex to SEP)

AT&L Memo DoDI 8320.04

➢ Directed all procurement organizations to verify to their Component Acquisition Executive by 15 January 2009 that the IUID clause will be included in all new contracts for which DoDI 8320.04 mandates IUID.

➢ Established the requirement for Investment Review Board (IRB) criteria compliance

➢ Directed a change in the requirement for program and item managers to complete IUID marking and registration by December 31, 2015 for selected items
>all existing Class II (Expendables)
>all existing Class IX (Repair Parts)
>embedded assets

>*For all other legacy items December 31, 2010 remains the target date for compliance*

>Established the Legacy Parts Implementation Working Group
>All IUID items that have a data plate or label be marked and registered as they are processed by depot maintenance activities

Key Responsibilities for IUID Implementation

➢**New Acquisition**

➢**Program Management Office:** Identify items requiring unique identification, including embedded subassemblies, components and parts and ensure functional requirements to implement are complete

➢**Contracting Officers:** Include DFARS clause 252.211-7003, Item Identification and Valuation, in all contracts that require delivery of items.

➢**Contractors:** Provide IUID marking in accordance with MIL-STD-130, Identification Marking of U.S. Military Property (current version)

➢**Legacy Items in Inventory or already on contract**

➢**Program Management Office:** Implement a marking and registration plan that includes both end items and embedded subassemblies, components and parts

➢**Engineering/Design Authority:** Define marking approach

➢**Depot Community:** Implement marking capabilities to

Defining the Scope of the UII

A UII Is	A UII Is Not
➢ A Data Element ➢ A Unique Identifier for an Item ➢ Globally Unique ➢ Unambiguous ➢ Permanent ➢ Created by Concatenating Specific Data Elements ➢ The enabler for business intelligence	➢ A Device for Communicating Data, such as Radio Frequency Identification (RFID) Tags, Contact Memory Buttons, Linear Bar Codes, or 2-D Data Matrices ➢ A Replacement for the National Stock Number ➢ Intelligent Data that Yields Information About the Item ➢ Transferable from one item to another

Sponsored by

Unique Item Identifier (UII) is…

UII is . . .
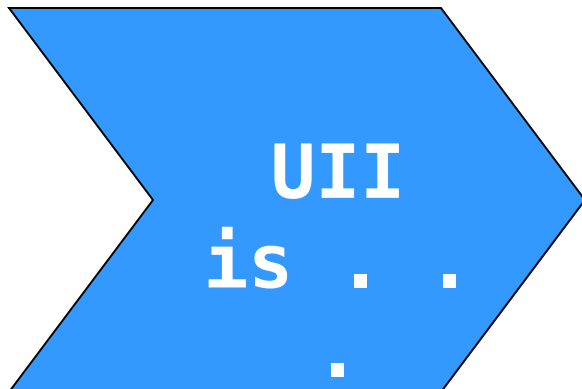
. . . the set of data for tangible assets that is globally unique and unambiguous, ensures data integrity and data quality throughout the life of the component, and supports multi-business ions and users.

EID
(12V)194532636

Orig. Part No.   (1P)1234

Serial No.   (S)786950

Create and Generate the UII

The components that make up the UII are identified in the table below. Each enterprise has two op

Based on current enterprise configurations	UII Construct #1	UII Construct #2
Based on current enterprise configurations	If items are serialized within the Enterprise	If items are serialized within Part Number
UII is derived by concatenating the data elements IN ORDER:	Issuing Agency Code* Enterprise ID Serial Number	Issuing Agency Code* Enterprise ID Original Part Number / Lot or Batch Number Serial Number
Data Identified on Assets Not Part of the UII (Separate Identifier)	Current Part Number** Other Traceability Number***	Current Part Number ** Other Traceability Number***

*The Issuing Agency Code (IAC) represents the registration authority that issued the enterprise identifier (e.g., Dun and Bradstreet, EAN.UCC). The IAC can be derived from the data qualifier for the enterprise identifier and does not need to be marked on the item.

** In instances where the original part number changes with new configurations (also known as part number roll), the current part number may be included on the item as a separate data element for traceability purposes.

*** The data identifier 30T has been designated for use as a traceability number that is not part of the UII. For example, applications may specify 30T for encoding lot or batch number when the lot or batch number is not required or desired in the UII.

Data Qualifiers Identify the encoded data elements

Data Element	DI (Format 06)	AI (Format 05)	TEI (Format 12)

Enterprise Identifier
   CAGE/NCAGE
   DUNS
   GS1 Company Prefix
   DoDAAC
   Other Agencies
	17V
	 12V
	 3V
	 7L
	 18V
			CAG, MFR, or SPL
			 DUN
			 EUC

Serial Number within Enterprise Identifier			**SER or UCN**
Serial Number within Original Part Number	**S**	**21**	**SEQ**
Original Part Number	**1P**	**01**	**PNO**
Lot/Batch Number	**1T**		**LOT, LTN, or BII**

Complete UII
 IUID Equivalents
   VIN
   ESN
   GRAI
   GIAI
	25S
	
	 I
	 22S
		
		 8002
		 8003
		 8004
			UID

Unique item identifier (not including the IAC)	**18S**		**USN or UST**

IUID Basic Tenants - Marking
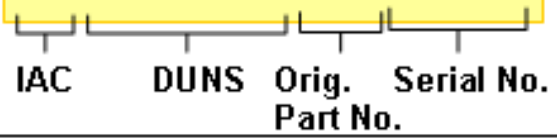
A compliant IUID Mark — Syntax & Semantics

➢ Using the syntax of ISO/IEC 15434, either of the three formats (TEIs, AIs, or DIs) can be used and Construct #1 (serialization within company), Construct #2 (serialization within Part/Lot/Batch) or DoD accepted equivalent are acceptable.

➢ This interoperability of formats permits enterprises to use their prevailing machine-readable marking processes

➢ Resulting Unique Item Identifier (UII) is globally unique number

UII Construct #2

EID	(12V)194532636
Orig. Part No.	(1P)1234
Serial No.	(S)786950

UII Construct #2

UN194532636 1234 786950

IAC   DUNS   Orig. Part No.   Serial No.

This example uses MH10.8.2 Data Identifiers.

Formats:

ATA: Text Element Identifiers (TEIs)

[)>^R_S11^G_S12V 0CVA5^G_SSER 674A36458$^R_S$$^E_O_T$

GS1: Application Identifiers (AIs)

[)>^R_S05^G_S8004 06141411A0B9C3D6$^R_S$$^E_O_T$

MH 10.8.2: Data Identifiers (DIs)
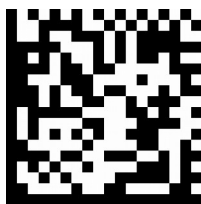
[)>^R_S06^G_S17V 0CVA5^G_S1P1234^G_SS786950$^R_S$$^E_O_T$

Create and Generate the UII, continued

A imaging device, or scanner, will "read" the mark and detect the encoded data string. The information system will determine what data is retained (i.e., UII, serial number, etc.)

[)>^R_S06^G_S17V0CVA5^G_S1P1234^G_SS786950$^R_S$$^E_O_T$

The concatenated UII

D0CVA51234786950

Create and Generate the UII, continued

BUSINESS RULES

The UII shall be derived from its discrete component data elements.

The UII is not required to be marked on the item as a separate data element.*

Serial No.   SER
786950

UII Construct #1

D1   0CVA5786950
IAC   CAGE   Serial No.

(12V)194532636

Orig. Part No. (1P)1234

Serial No.
(S)786950

UII Construct #2

UN194532636123478695 0
IAC   DUNS   Orig.   Serial
              Part No. No.

[1]   This example uses Text Element Identifiers

[2]   This example uses MH10.8.2 Data Identifiers.

*If the enterprise chooses to mark the UII as a discrete data element on the item, the component data elements must also be marked on the item as discrete data elements, in addition to the UII.

Marking Techniques
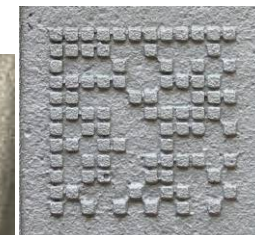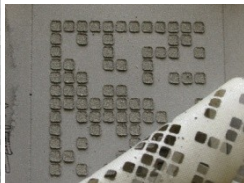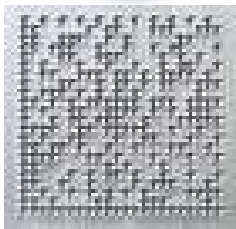
- Labels (Stickers)
- Data Plates
- Dot Peen
- Laser Etch
- Chemical Etch
- Silk Screening
- Thermal Spray

- Ink Jet Printing
- Laser Ablation
- Laser "Annealing"
- Cast/Forged
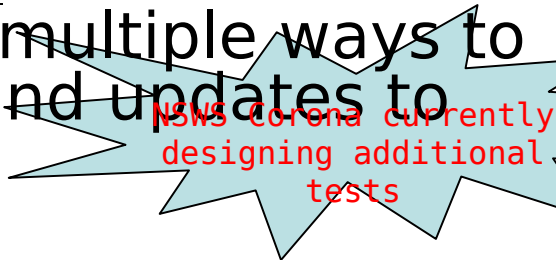- Laser Bonding
- Embroidery
- Photo Etch

Compliant UII marks are optically read…so almost any marking method will work!
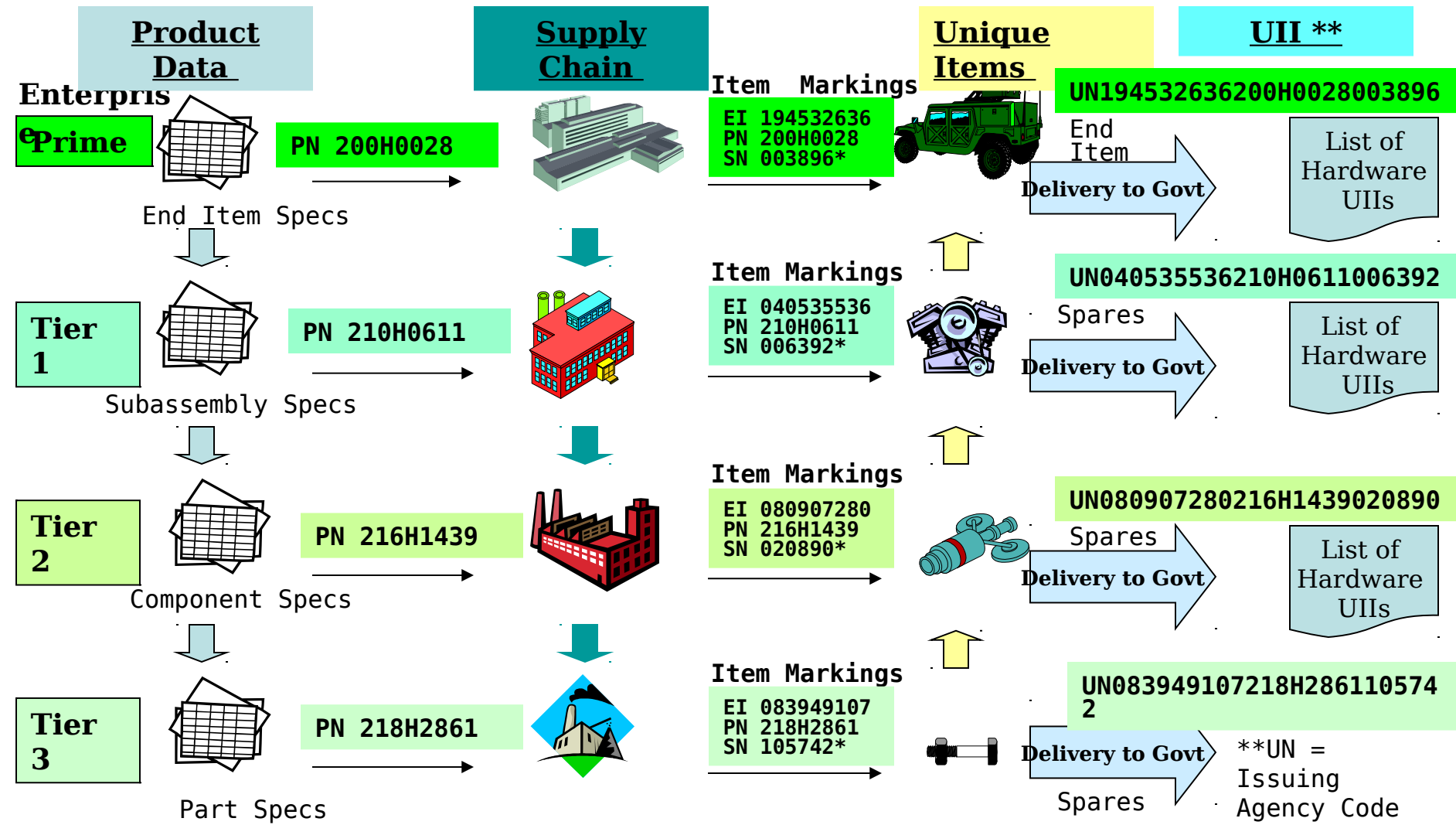
Marking Considerations

➢First leverage existing marking methods and tools
  ▪IUID does require a 2D ECC 200 Data matrix, but does not dictate the marking method used other than **permanency and durability requirements**

➢If parts are currently marked with data plates or labels, IUID should be incorporated into the existing marking practice where possible.

➢Organizations should explore the multiple ways to manage technical documentation and updates to minimize implementation costs.

NSWS Corona currently designing additional tests

➢Implement the Marking Guidance
  ▪Central references should be updated if possible vice drawings
  ▪Technical documentation may need to be updated to incorporate IUID requirements if there is no central reference

Applying the UII

➢ **Vendor-Applied-at-Source:** Marking applied when item is manufactured

➢ **Opportunity-Based Item Application:** Can be done in the field or factory, wherever it is convenient to gain access to items either on an end item or available in a storage facility (phase maintenance, scheduled servicing, depot rebuild or overhaul processes, and work-order processes during modification)

➢ **Seek-and-Apply:** Used for particular items held within service, either at the end item or in storage. This strategy is dependent on establishing the location and availability of items before deployment of application equipment and teams. This approach is dependent upon good legacy data, and will demand greater overhead of coordinated effort to effect access to the assets.

➢ **Gated:** The interception of items as they transit specific gates within the supply chain. After identification, the situation can be resolved by diverting the item back to the vendor for application, provision of an application capability at the specific supply gate, or diversion of the item to a centralized application facility.

IUID in the Acquisition System

Product Data	Supply Chain	Unique Items	UII **

Enterprise

Prime   PN 200H0028

End Item Specs

Item Markings
EI 194532636
PN 200H0028
SN 003896*

UN194532636200H0028003896

End Item — Delivery to Govt

List of Hardware UIIs

Tier 1   PN 210H0611

Subassembly Specs

Item Markings
EI 040535536
PN 210H0611
SN 006392*

UN040535536210H0611006392

Spares — Delivery to Govt

List of Hardware UIIs

Tier 2   PN 216H1439

Component Specs

Item Markings
EI 080907280
PN 216H1439
SN 020890*

UN080907280216H1439020890

Spares — Delivery to Govt

List of Hardware UIIs

Tier 3   PN 218H2861

Part Specs

Item Markings
EI 083949107
PN 218H2861
SN 105742*

UN083949107218H2861105742

Delivery to Govt

Spares

**UN = Issuing Agency Code for DUNS

UII = Unique Item Identifier; EI = Enterprise Identifier

* Serialized within the part number using DUNS as EI

DoD UII Equivalents

➤Criteria for Determining DoD IUID Equivalents
  - Must contain an enterprise identifier which is assigned by a registration or controlling authority
  - Must uniquely identify an individual item within an enterprise identifier, product or part number
  - Must have an existing Data Identifier (DI) or Application Identifier (AI) listed in ANSI MH10.8.2, Data Identifier and Application Identifier Standard

➤Identifiers Meeting the Equivalence Criteria
  - Global Individual Asset Identifier (GIAI) EAN.UCC (AI:8004)
  - Global Returnable Asset Identifier (GRAI), EAN.UCC (AI: 8003)
  - Vehicle Identification Number (VIN) ISO 3779 (DI: I)
  - Electronic Serial Number (ESN, cellular

Marking Items

DoD Guide to Uniquely Identifying Items V2.0 (October 1, 2008)

Appendix D – The Mechanics of Item Unique Identification

Addresses Constructs 1 & 2

Multiple examples

Department of Defense Guide to Uniquely Identifying Items

Assuring Valuation, Accountability and Control of Government Property

Version 2.0
October 1, 2008

Office of the Deputy Under Secretary of Defense
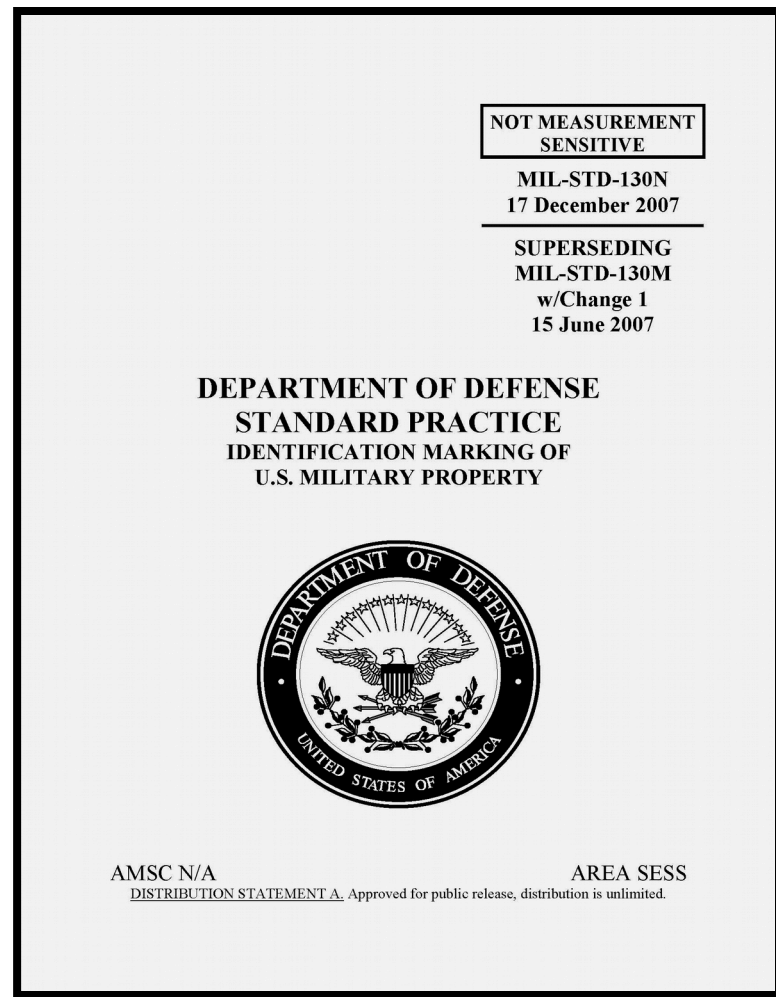(Acquisition, Technology & Logistics)

Marking Items

MILSTD 130N

DoD Standard Practice [for] Identification of U.S. Military Property
17 December 2007
[Supersedes "M"]

Establishes quality requirements

Provides "*further clarification and increased insight and guidance for the implementation of machine-readable information (MRI) for item identification marking and automatic data*

NOT MEASUREMENT SENSITIVE

MIL-STD-130N
17 December 2007

SUPERSEDING
MIL-STD-130M
w/Change 1
15 June 2007

DEPARTMENT OF DEFENSE
STANDARD PRACTICE
IDENTIFICATION MARKING OF
U.S. MILITARY PROPERTY

AMSC N/A   AREA SESS
DISTRIBUTION STATEMENT A. Approved for public release, distribution is unlimited.

Business Rules for UII Construction & Physical Marking

➢ DoD organizations may not dictate to the Contractor either the UII construct, semantics, serialization or the use of the Government's Enterprise Identifier

➢ If UII Construct #2 is used, the enterprise must maintain the original part number on the item for the life of the item

➢ The UII will not change over the life of the item. Therefore the component data elements of the UII will not change over the life of the item

➢ Where space is available, human readable information for UII data elements shall be marked on the item.

Virtual UIIs

➤ UIIs can be assigned in advance of items being physically marked, only:
  For legacy items already in inventory or operational use
  For government property in the possession of contractors

➤ Certain conditions apply:
  Requires serialized identity data to have been previously marked on item
  Requires Virtual UII registration in the UID Registry
  Identifies item until a trigger for physical marking (maintenance, etc.) at which point the   Virtual UII is

Use Virtual UII cautiously!

AIDC Benefits

Automatic **I**dentification and **D**ata **C**apture

➢Reduces human error in inventory control

➢Reduces manpower hours spent in data entry

➢Creates capabilities to identify items and histories (e.g., source, usage, and maintenance)

➢Enables specific item tracking throughout supply chain and operational use worldwide

IUID Registry

➢Purpose:
  Collect IUID and pedigree information of tangible items owned by DoD
  Distribute IUID and pedigree information to DoD users
  Provide single point of reference for DoD tangible items that have assigned Unique Item Identifiers

➢Operational Environment:
  IUID Registry – database located in Battle Creek, MI
  Operated by Defense Logistics Information Service (DLIS)
  Resides on Business Process Network backbone

➢Submit Data
  By WAWF
 XML or flat file through GEX
  Manually via IUID Web Entry Site a
  http://www.bpm.gov/iuid

Rapidly Growing!
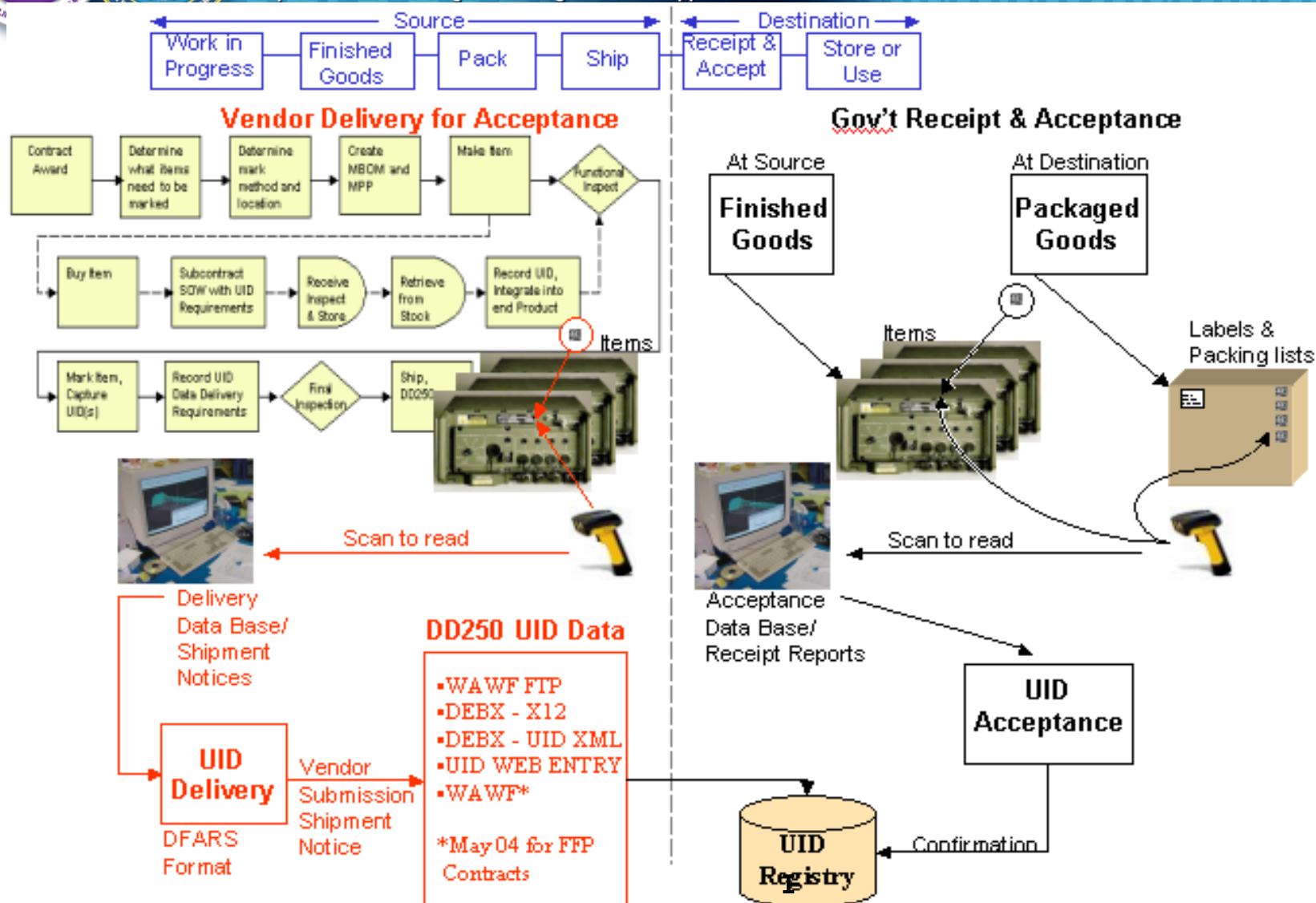
IUID-RFID Relationship

RFID tags that carry data are required to be attached to packages at multiple levels, including item packages, cases, and pallets. Unique Item Identifiers are required to be attached or directly marked on items using a data matrix to carry the UII data elements.
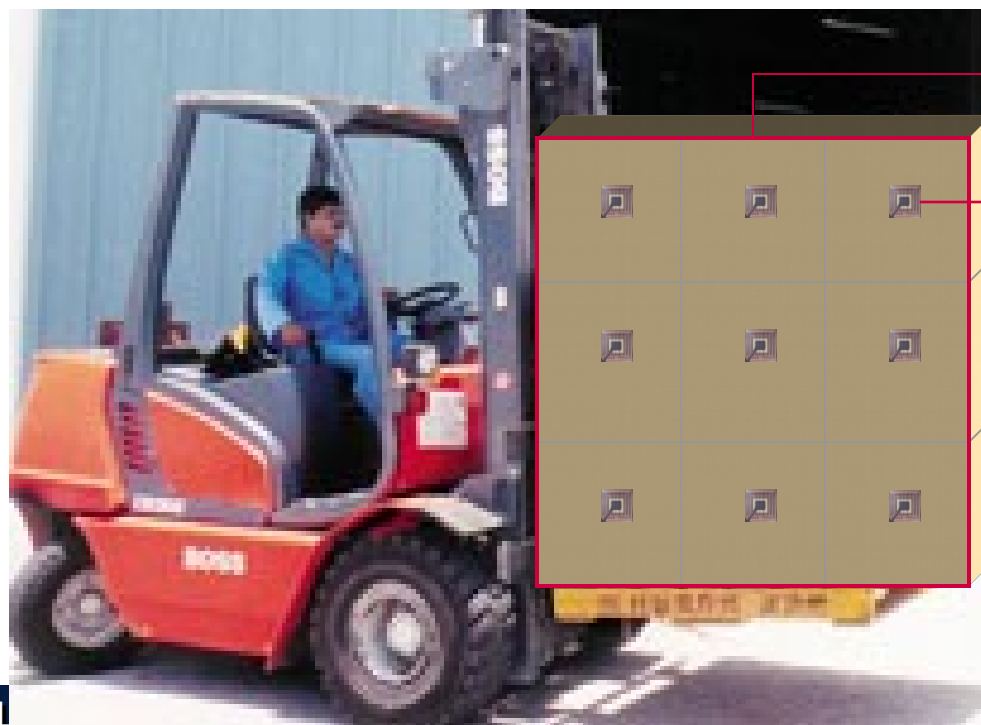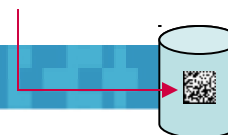

RFID Tag (Pallet Level)

RFID Tag (Case Level)

RFID Tag (Item Package Level)
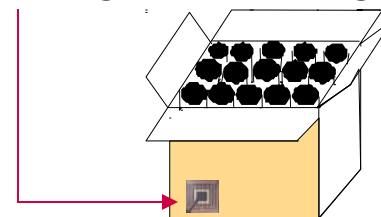
IUID Data Matrix (Item Level)

Online Resources

Official DoD UID Policy Office Website

www.uniqueid.org

Comprehensive resource of UID and IUID policies, standards, directives,

videos and success stories.

Be sure to sign up for the *IUID in Action* eNewsletter!

IUID Helpdesk

defensepolicysupport@ebpsc.org or 1.877.376.5787

Defense Acquisition University

www.dau.mil

DAU offers **2** distinct online courses to increase your IUID knowledge

CLE040 "Item Unique Identification Marking" and CLM200 "Item Unique Identification"

Back-Up Slides